MT 24/40 GALLON SERIES

MODULAR BASE DIRECT STEAM TILTING KETTLES

INSTALLATION - OPERATION - MAINTENANCE

MODELS

- ❑ MT-25
- ❑ MT-40

MARKET FORGE INDUSTRIES INC.

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Your Service Agency's Address:

Model

Serial number

Kettle installed by

Installation checked by

IMPORTANT

WARNING: Improper installation, adjustment, alternation, service or maintenance can cause property damage, injury or death. Read the installation, operation and maintenance instructions thoroughly before installing or servicing this equipment.

FOR YOUR SAFETY

DO NOT UNDER ANY CIRCUMSTANCE CONNECT THE EXHAUST DRAIN LINE DIRECTLY TO A SEWER LINE.

Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

The information contained in this manual is important for the proper installation, use, and maintenance of this kettle. Adherence to these procedures and instructions will result in satisfactory baking results and long, trouble free service. Please read this manual carefully and retain it for future reference.

ERRORS: Descriptive, typographic or pictorial errors are subject to correction. Specifications are subject to change without notice.

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Introduction

Market Forge tilting direct steam jacketed kettles of two capacities, each mounted in a modular stainless steel cabinet.

Double wall construction around the lower half of the kettle forms a surrounding chamber into which steam is introduced as a source of heat for cooking.

Steam input plumbing is equipped with a manual control valve. Condensate is removed through a steam trap connecting with the kettle drain plumbing assembly. A swivel spout, hot-cold combination faucet provides a source of water for addition to the kettle for cooking and cleaning.

Large capacity kettles are fitted with heavy duty tilting mechanisms operated by removable hand crank. Each model is equipped with a pan support which maintains continuous alignment of serving pans under the pouring spout at all levels of kettle elevation. Counterbalanced hinged lids cover the kettles in the lowered position. All are plumbed for direct connection to a remote steam source.

Applicable model designation includes:

- MT-25 (25-gallon) – 36” wide (914mm) cabinet base
- MT-40 (40-gallon) – 36” wide (914mm) cabinet base

Service:

Required service, both repair, replacement, and adjustment is explained in Adjustments section of this manual. Other service help can be found in the Trouble Shooting and Maintenance sections of this manual. Should repairs be required, a network of Authorized Service Agents is available to assist with prompt service. A current list of Authorized Service Agencies may be obtained by contacting Market Forge direct of going on our website www.mfii.com.

The model and serial number must be referenced when corresponding with Market Forge. These numbers can be found on the data plate located on the upright frame behind the cabinet base door. If you require further assistance in obtaining these numbers, please contact us directly.

SERVICE CONNECTIONS

S	**Steam Supply** - 3/4" (19mm) NPT, 15 P.S.I (1.0 kg/cm2) minimum; 30 P.S.I (2.1 kg/cm2) maximum.
HW	**Hot Water** - 3/8" (10mm) 3/8" (10mm) NPT for hot water to faucet. Hot water line will have a maximum of 50 PSI (3.5kg/ cw2) and a minimum of 25 PSI (1.8 kg/cw2) water pressure (Water may be filtered).
CW	**Cold Water** - 3/8" (10mm) NPT for cold water to faucet. Cold water line will have a maximum of 50 PSI (3.5kg/cw2) and a minimum of 25 PSI (1.8 kg/cw2) water pressure.
D	**Drain** - Pipe full 2" NPT (51mm) to flush floor drain. Do not make solid connection to drain.
CR*	**Optional Condensate Return** - 1/2" NPT (13mm) connection for condensate return from kettle when specified.
EC*	**Electrical Controls** - 115 volts AC, 60 Hz, 40 watts, 1/2" (13mm) conduit connection or equivalent. Use wire suitable for at least 90°C. Draws less than 1 Amp with power lift.

* Optional

NOTES:

Pressure-reducing valve is required if incoming pressure exceeds 30 PSI (2.1 kg/cm2).

Recess area for kettle draw-off (dotted line) must be kept free of all piping and connections.

PVC and CPVC pipe are not acceptable materials for drains.

Separate height for 25 and 40 gallon kettles.

DIMENSIONS ARE IN INCHES [MM]

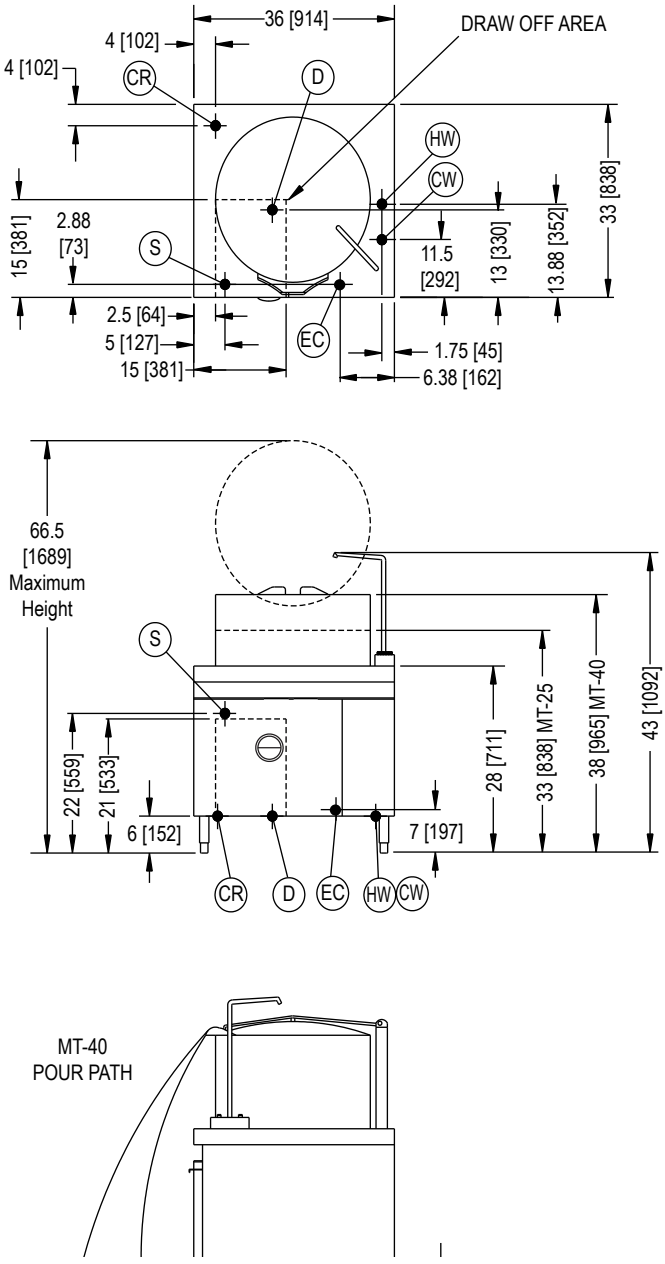

Figure 1

All kettles must be supplied with steam from a boiler which is remotely located. Consult steam boiler information or instruction plate and complete all start-up instructions. Proceed with kettle operating procedure as follows:

1. Check pressure gauge of steam supply source to insure steam input is at 15 PSI (1.0 kg/cm2). For direct connected steam, turn on external steam supply valve.
2. Check that Draw-Off Valve is tightly closed.
3. Lift kettle lid and place either a Solid or Perforated Drain Disc over the drain inside kettle. Use solid disc to retain liquids; perforated to strain liquids from food.
4. Load kettle with foods to be cooked.
5. Add water for cooking by swinging spout over kettle and using Combination Faucet.
6. Turn Steam Control Valve to full counter-clockwise position to heat kettle content to an initial rapid boil.

   NOTE: The volume of steam going into the kettle jacket can be controlled at any time by adjusting the kettle steam control valve in either direction. Turn clockwise to reduce heat and counter-clockwise to increase.
7. Close Steam Control Valve (full clockwise position) when cooking is complete.

⚠ **CAUTION**

Food must be removed from the kettle immediately.

8. Remove food from tilting kettles. With a full pan in the pan support, and the crank installed in the front of the cabinet, turn the crank clockwise to tilt the kettle for pouring. (Tilting mechanism is infinitely adjustable and non-coasting in kettle elevation and lowering). Liquid foods may also be removed by use of the Draw-Off Valve.

PAN SUPPORT MOUNTING TILTING KETTLES

For convenience during cooking, the pan support need not be installed until needed for removing food from the kettles. To ensure correct operation and to prevent spills the support must be securely installed as shown in “Figure 3” and as explained below:

1. Hold the pan support in front of the upright as shown at A.
2. Place the stud of the left-hand support upright into the hole in the left side of the pan support. Then push the right side of the support in until it engages the spring loaded pin of the right-hand support upright, shown at B.
3. Rotate the pan support upward (C) and engage the slotted ends of the support links in the studs at the base of each support upright as in D.

The removal procedure is the reverse of installation with the exception that in step 2 support upright springs must be pushed out to release the support from studs.

Figure 2

A Steam Jacketed Kettle is a stainless steel kettle jacketed or encapsulated by a second outer kettle, creating a space between the two kettles. Cooking is achieved by allowing steam to flow within this space. The jacket or outer kettle usually covers 2/3 of the inner kettle, although some kettles are fully jacketed

The steam flowing in the space between the kettles condenses on the cold inner kettle wall and releases heat through the wall to the food in the kettle. The condensate drains to the bottom of the kettle and is released through a steam trap without any loss or variation in steam pressure. The amount of steam allowed to flow Into the Jacket controls the heat of the kettle. In use, the Steam Jacketed Kettle provides consistent heat distribution and is energy efficient using steam only to maintain pressure, unlike top of the range cooking in which energy (gas or electricity) is used during the entire cooking process.

Steam Jacketed Kettles can sauté, simmer, or boil a wide variety of products, such as soups, gravies, sauces, pasta, stews, mixed casserole type dishes, vegetables, shellfish, cereals, hot beverages, and puddings. A Steam Jacketed Kettle will not burn foods. However, foods that caramelize at relatively low temperatures, such as eggs and milk based products, will coat and cook onto the sides of the kettle. Care should be taken to use the smallest flow of steam, to lessen the possibility of scorching these products. To achieve this, allow products to come up to desired temperature, stirring frequently, then turn off steam flow and gradually turn on a small flow of steam - just enough to allow food to cook.

Steam Jacketed Kettles eliminate much range top cooking and greatly reduce the number of pots and pans required. Because they are made of stainless steel, they are durable, non-porous and easy to clean.

- Estimate actual cooking capacity of Steam Jacketed Kettles at 3,4 of its volume, to allow stirring without spillage.
- Plan an adequate drain arrangement. This is very important for ease of use and to minimize wet floors. A grated gutter type drain located in front of the kettles is preferred as it eliminates the hazards of tripping over a curb or stumbling into a recessed drain area.
- Locate a source of water (swivel faucet or flexible hose type) near the kettle to facilitate filling and cleaning.
- Cover products whenever possible to save energy. Covered water boils 25 to 30% faster.
- Use the tangent draw off valve to drain off products from the kettle such as sauces and puddings, or cooking liquids that are being discarded (as in the case of the water used to cook pasta)
- Remove the tangent draw off valve after each use for cleaning, using a brush to clean draw off as bacteria will readily multiply in this area if it is not thoroughly cleaned.
- Use the optional solid kettle disk when product is not going to be dispensed through the draw off valve, and the perforated disk when draining off liquids through the draw off valve and retaining the solid product in the kettle.

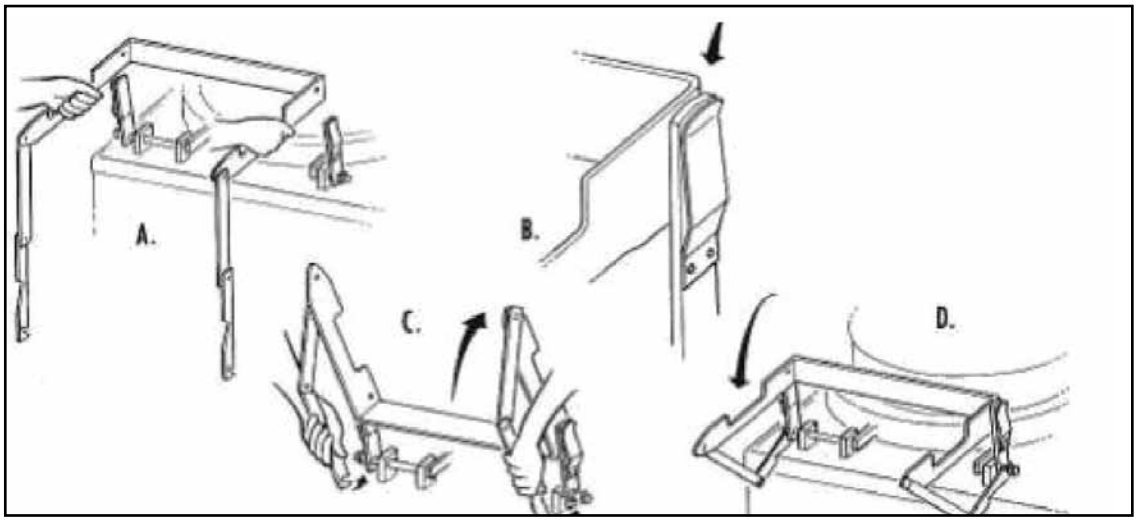

Figure 3

Cooking Chart

This chart merely shows single load capacities as it is felt that in most cases the kettle would be used only once per meal.

ITEM	COOKED PORTION SIZE	KETTLE SIZE	
		25 gallon (95 liters)	40 gallon (150 liters)
BEVERAGES			
Cocoa or Coffee	6 oz or 3/4 cup (180 ml.)	Yield: 20 gal. (75 l.) Portions = 425	Yield: 35 gal. (132 l.) Portions = 745
BREAKFAST FOODS			
Cereal	6 oz or 3/4 cup (180 ml.)	Amt. Raw: 20# (9 kg.) Portion = 270	Amt. Raw: 36 # (16.3 kg) Portion = 480
Scrambled Eggs	4 oz or 2 eggs each (115 g.)	Eggs: 90 dz. 18 gal. (120 l.) Portions = 540	Eggs: 160 dz., 32 gal. (166.5 l.) Portions = 960
DESSERTS			
Cornstarch Pudding	4 oz. or 1/2 cup (120 ml.)	Yield: 17 gal. (64.3 l.) Portions = 545	Yield: 30 gal. (113.5l.) Portions = 960
Gelatin	4 oz. or 1/2 cup (120 g.)	Yield: 20 gal. (75 l.) Portions = 640	Yield: 35 gal. (132 l.) Portions = 1120
MAIN ENTREES *			
Macaroni, Beef and Tomato	6 oz. or 3/4 cup (170 g.)	Yield: 17 gal. (65 l.) Portions = 360	Yield: 30 gal. (113 l.) Portions = 640
Baked Beans	5 oz. or 2/3 cup (140 g.)	Yield: 20 gal. (75 l.) Portions = 500	Yield: 32 gal. (120 l.) Portions = 800
Beef Stew	8 oz. or 1 cup (225 g.)	Yield: 17 gal. (65 l.) Portions = 270	Yield: 30 gal. (113 l.) Portions = 480
Macaroni and Cheese	5 oz. or 2/3 cup (140 g.)	Yield: 17 gal. (64 l.) Portions = 425	Yield: 30 gal. (113 l.) Portions = 750
Turkey A La King	4 oz. or 1/2 cup (115 g.)	Yield: 17 gal. (64 l.) Portions = 545	Yield: 30 gal. (113 l.) Portions = 960
MISCELLANEOUS			
Gravy/Sauce	2 oz. or 3/4 cup (60 ml.)	Yield: 20 gal. (75 l.) Portions = 1200	Yield: 35 gal. (132 l.) Portions = 2000
MACARONI AND RICE			
Noodles	4 oz. or 3/4 cup (115 g.)	Amt. Raw: 20 gal. (9kg.) Portions = 220	Amt. Raw: 35 # (15.8kg.) Portions = 385
Rice	3 oz. or 1/2 cup (85 g.)	Amt. Raw: 20 gal. (9 kg.) Portions = 320	Amt. Raw: 35 # (15.8 kg.) Portions = 560
Spaghetti or Macaroni	4 oz. or 3/4 cup (115 g.)	Yield: 20 gal. (9 kg.) Portions = 320	Amt. Raw: 35 # (15.8kg.) Portions = 385

** All main entree figures are given in terms of raw ingredients.*

ITEM	COOKED PORTION SIZE	KETTLE SIZE	
		25 gallon (95 liters)	40 gallon (150 liters)
SOUPS			
Basic Cream Soup	6 oz. or 3/4 cup (180 ml.)	Yield: 20 gal. (75 l.) Portions = 400	Yield: 35 gal. (132 l.) Portions = 700
Broth Type Soup	8 oz. or 1 cup (240 ml.)	Yield: 20 gal. (75 l.) Portions = 325	Yield: 35 gal. (132 l.) Portions = 560
VEGETABLES			
Fresh	4 oz. or 1/2 cup (115 g.)	Amt.Raw: 80#. (36.3kg.) Portions = 335	Amt. Raw:120 # (54.4 kg.) Portions = 500
Frozen Loose Pack	4 oz. or 1/2 cup (115 g.)	No. Of Packages: 50 Portions = 550	No. Of Packages: 80 Portions = 880
Frozen Solid Pack	4 oz. or 1/2 cup (115 g.)	No. Of Packages: 25 Portions = 275	No. Of Packages: 40 Portions = 440

Cleaning the Kettle

The most important preventive maintenance operation on the steam jacketed kettle is the daily cleaning procedure after each use.

All kettle cleaning procedures should be faithfully completed by the end of each day's operation. In addition, cabinet doors, top, fixtues, kettle lid, etc., should be washed and rinsed to remove all food spills.

1. Fill kettle with water and mild detergent immediately after removing food from kettle.
2. Scrub kettle interior with a nylon brush.

   NOTE: NEVER SCRAPE KETTLE INTERIOR WITH METAL TOOLS, STEEL SCOURING PADS OR ABRASIVE CLEANERS. Scratches will result, which will ruin the kettles general appearance and make it harder to clean and maintain in a sanitary condition.
3. Loosen food which is stuck to kettle by allowing it to soak. Also, a small amount of steam may help.
4. Position swing drain under draw-off valve. Open draw-off valve to drain soapy water.
5. Wipe down exterior, rinse and dry. Avoid getting water into electrical controls.

⚠ **WARNING**

DO NOT HOSE DOWN UNIT AS IT MAY CONTAIN ELECTRICAL COMPONENTS.

6. Remove strainer from inside kettle. Wash and rinse thoroughly.
7. Disassemble draw-off valve by first turning valve handle counterclockwise. Then, turn hex nut counterclockwise until valve handle and stem are free.

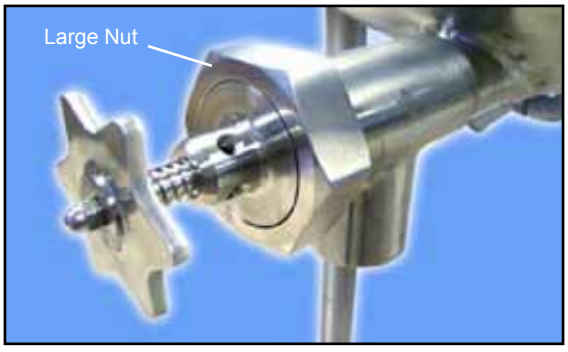

Figure 4

8. Wash inside of draw-off valve with a nylon brush.

Figure 5

9. Rinse kettle valve interior and reassemble valve.

   NOTE: Leave draw-off valve open when kettle is not in use.
10. Remove swivel drain and its strainer. Wash, rinse and replace.

Tilting Mechanism Lubrication

Lubrication of the tilting mechanism is the only required preventive maintenance other than daily cleaning.

1. Inspect the screw of the tilting mechanism annually for adequate lubrication.
2. If screw appears "dry", apply good grade bearing grease directly on the threads so that the threads appear to be barely damp.